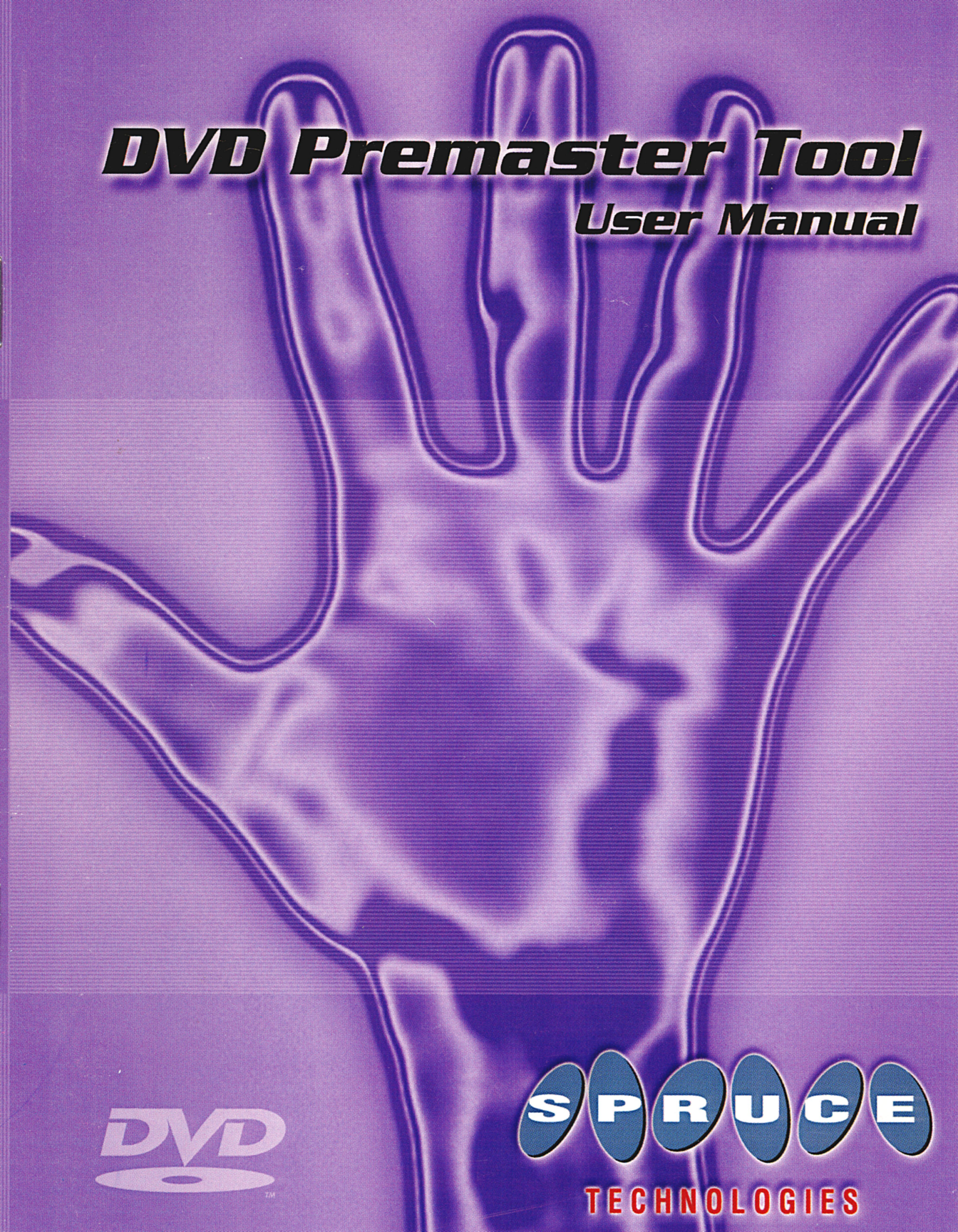
DVD Premaster Tool

User Manual



DVD™

SPRUCE TECHNOLOGIES

User's Guide for

DVD Premaster Tool

Preparing DVD Titles for Mastering and Replication

Part Number 03853-02

For Version 2.8 Software

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3/21/01

Introduction

The Spruce DVD Premaster Tool is a standalone program for use in preparing DVD Video, DVD ROM, and DVD Hybrid titles for mastering and replication. It is designed for use in a networked workgroup environment with Spruce DVD Video authoring products, or as a standalone application. Its capabilities include:

- Compilation of any project prepared with Spruce DVD authoring tools into a valid DVD data set (Video_ts directory).
- Formatting of DVD Video, DVD ROM, or Hybrid data sets into an ISO-9660/micro-UDF bridge disc image on hard disc, DVD-R, CD-R/RW, or DLT tape (DDP format) for replication.
- Transfer of formatted DVD disc image to DVD-R or CD-R/RW.
- Transfer of formatted DVD disc image to DLT in DDP format for replication.
- Bit-for-bit verify of disc image on hard disc against DLT tape for quality assurance prior to mastering and replication.

This document contains the following sections:

Introduction –Includes basic information on DVD Premaster Tool.

Installing DVD Premaster Tool Software – Explains how to install the necessary software to run the application.

General Operations – Explains basic operations and requirements.

Compiling a DVD Project – Explains how to compile a DVD project, using step-by-step examples.

Disc Image Formatting – Provides information on disc image format considerations. It describes how to create an image on your hard disc or write directly to DVD-R, CD-R/RW, or DLT.

Transferring the Disc Image to DVD-R or CD-R/RW – Discusses how to transfer the disc image to a DVD-R or CD-R/RW.

Transferring the Disc Image to DLT – Explains how to transfer the disc image to DLT.

Verifying the DLT – Explains how to verify the contents of the DLT after you have performed a transfer.

Network Operation – Discusses issues related to operating Premaster Tool across a network.

Index – Useful to locate specific text.

Some Basic Information

Your Spruce DVD Premaster Tool software is a Microsoft Windows® NT 4.0 application. (As you may be aware, Windows NT is essentially the "professional" counterpart to Windows 95 and Windows 98, used by many businesses and creative production applications.) Among many other benefits, you don't need to be a Windows NT expert to run Spruce software. We do, however, expect that you're at least moderately familiar with Windows NT, Windows 98, or Windows 95. For instance, you should understand such fundamental issues as working with Windows pull-down menus; resizing and moving windows; and using the Windows Explorer to copy, move, open, delete, and otherwise manage files and folders.

It is assumed that you are using this software in conjunction with one of our authoring applications (DVDMaestro™, DVDConductor™, or DVDVirtuoso™), and that you are familiar with their capabilities. Consult the User's Guide that came with your authoring application for details as needed.

Contacting Spruce Technologies Technical Support

Should you run into any questions or problems for which you don't find answers in this manual, Spruce Technology's technical support staff is ready to help you.

Here's how you can reach our Technical Support staff:

Spruce Technologies Technical Support

- toll-free telephone (US & Canada): (877) 2-SPRUCE / (877) 277-7823
- international telephone: +1 (408) 861-2299
- fax: (408) 863-9701
- email: techsupport@spruce-tech.com
- Web: www.SpruceDVD.com

Our technical support hours are Monday through Friday 9am to 5pm (North American Pacific time). Our main switchboard telephone number is (408) 863-9700.

Visit the Spruce User Forum

Spruce has a User Forum where you can share ideas and find answers to questions. Visit it at: www.spruceuserforums.com.

Installing DVD Premaster Tool Software

What is Supplied

DVD Premaster Tool includes this manual, the installation CD, and a software protection key (known as a "dongle").

What You Need to Provide

As mentioned earlier, DVD Premaster Tool software is a Windows NT 4.0 application. It must be installed on a PC running Windows NT 4.0. We recommend that the PC have 128MB of RAM and one or more large hard drives to compile and create disk images on. It must have a SCSI port capable of supporting a DLT drive and/or DVD-R recorder.

In order to send your completed titles out for replication or to create your own "one-off" discs, you'll need either a DLT (Digital Linear Tape) drive or a DVD-R recorder, such as the Pioneer DVR-S101 or DVR-S201. Contact your dealer for more information on these DVD-R recorders.

Currently, most replicators require a DLT for duplication, rather than a DVD-R disc. Premaster Tool supports the new CMF (Cutting Master Format) DVD specification that some replicators now accept in place of DLT masters. Even when using a DLT as the master, many professionals still find a DVD-R to be an extremely useful tool during a title's development, for making one-off discs for testing, for clients, or for other purposes. And if your replication needs are modest you'll probably find a DVD-R to be far more cost effective than having your titles commercially replicated.

Installing the Software

Install Spruce DVD Premaster Tool software using standard Windows NT procedures, as follows:

1. Insert the Spruce DVD Premaster Tool CD ROM into your system's CD ROM drive.
2. Click on *Start*, then *Run…*, then use *Browse* to locate the drive. The disc's root shows an installer directory. Select the installer directory.
3. Select the *Setup.exe* file. This takes you back to the initial Run dialog.
4. Click *Run*. This starts the installation wizard that steps you through the process.

Installing the Dongle

Once the software is installed, the next step is to install the dongle. It is highly recommended that you use the following procedure whenever it is necessary to remove and install dongles.

1. Power down your system.
2. Wait for one minute before removing or installing the dongle onto the PC's parallel port.
3. Power up the system. You are now able to run the DVD Premaster Tool.

A Dongle Example

General Operations

Upon startup, the Premaster Tool presents a single interface to compile Spruce DVD Video projects, format DVD disc images, and transfer a disc image to DVD-R, CD-R/RW, or DLT tape for mastering and replication.

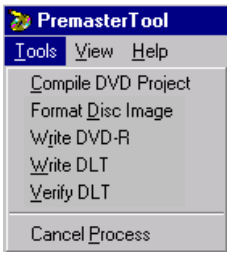
A single button in the interface represents each of the major functions of the program. When the cursor rolls over any one of the buttons, the legend to the right of the button changes, providing a more complete description of the function initiated by that button, as shown below.

Once any of the functions are executed, for example starting a compile, the interface changes as follows:

- Its button turns blue.
- A progress bar replaces the area to the right of the button.
- The remaining buttons are dimmed and are inactive.

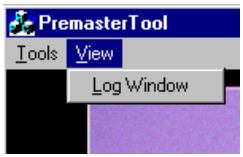
In all cases, clicking on its (now blue) button cancels the function. In addition, you may click on ***Cancel Process*** in the Tools pull down menu (keyboard equivalent Alt + t + p).

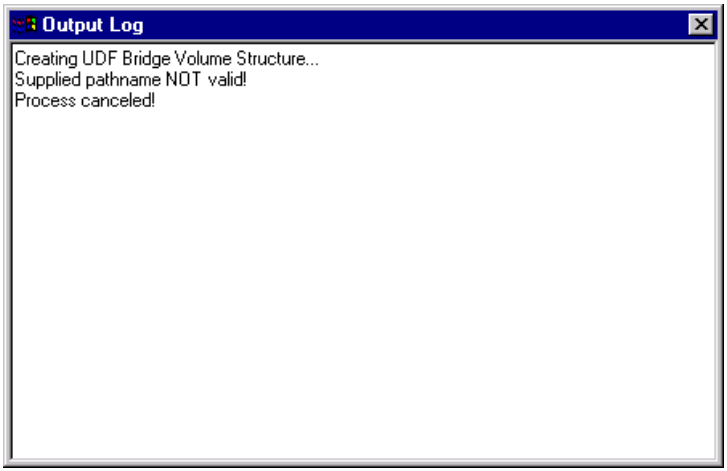
Each of the functions triggered by the onscreen buttons can also be invoked by commands in the Tools menu, and with keyboard equivalents.



Compile DVD Project	Alt + t + c
Format Disc Image	Alt + t + d
Write DVD-R	Alt + t + r
Write DLT	Alt + t + w
Verify DLT	Alt + t + v
Cancel Process	Alt + t + p

The program maintains a log of operations. The Output Log window may be brought into view using the command in the View menu, or using its keyboard equivalent (Alt + v + l).





Compiling a DVD Project

The DVD Premaster Tool compiles DVD Video projects prepared with Spruce DVD authoring systems (DVDMaestro™, DVDConductor™, or DVDVirtuoso™) into a directory and set of files that are compatible with the DVD Video specification.

Preparing the Project

During compilation, the DVD Premaster Tool assembles all current Project information, including DVD Menus, DVD Movies, connections, assets, language selections, and so forth. In the process, audio, video, and graphic information are multiplexed into composite data streams, and navigation information is compiled into DVD-compliant form.

Prior to compiling the DVD project, set all relevant properties, including the Macrovision APS settings, as described in the User's Guide for the Spruce authoring software version in use, and save the project to disc.

> *Note: The Macrovision settings must be made with the authoring program; they cannot be changed with the Premaster Tool.*

Launching Compile

To compile a Spruce DVD project with the DVD Premaster Tool:

1. Click the ***Compile DVD Project*** button in the main program interface.

   – or –

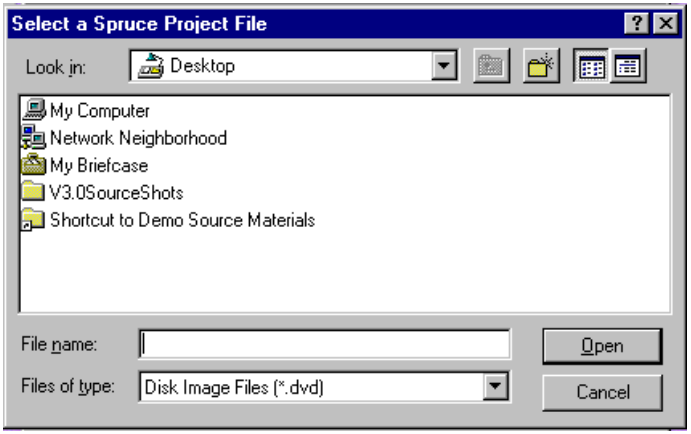
   Select the Tools pull-down menu and choose ***Compile DVD Project***.

   – or –

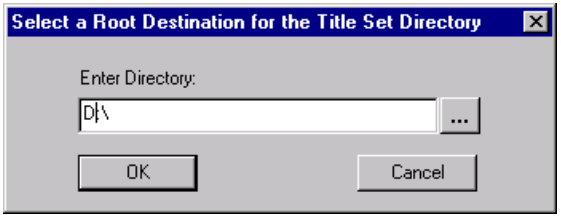
   Use the key combination Alt + t + c from the keyboard.

2. The first dialog that appears allows selection of a Spruce DVD project (.dvd file) from any volume on the local system or network.

Note: Performance of a compile over a network depends entirely on network performance. See the Network Operation section for information on this.

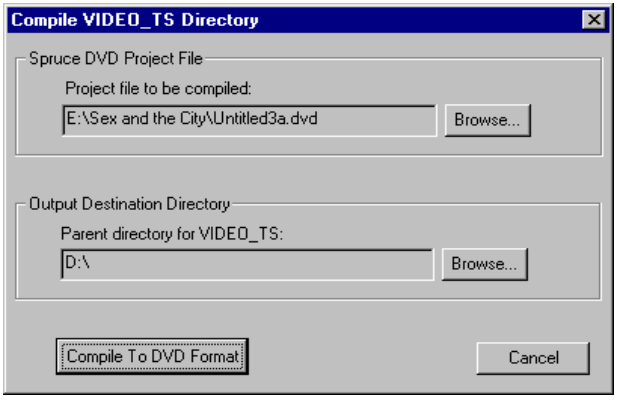


3. Once the source project file is selected, a dialog appears to select the target directory where the DVD data structure (Video_ts directory) will be assembled. Either type the directory (folder) name where the compiled project is to be saved, or click the "..." button, to browse. Click ***OK*** once you've located it.

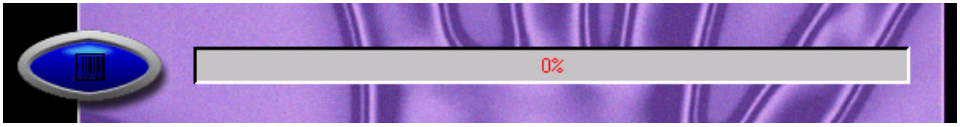


Note: If the Spruce-supplied DVDPlayer or DVD Station utility will be used to review the compiled title, we recommend compiling to the top level of a disc volume, as this is where these utilities look for a source Video_ts directory.

4. After defining the source project and target directory, the information will be displayed for confirmation. If necessary, the selections can be changed from this dialog. To initiate the compile, click on ***Compile To DVD Format***.



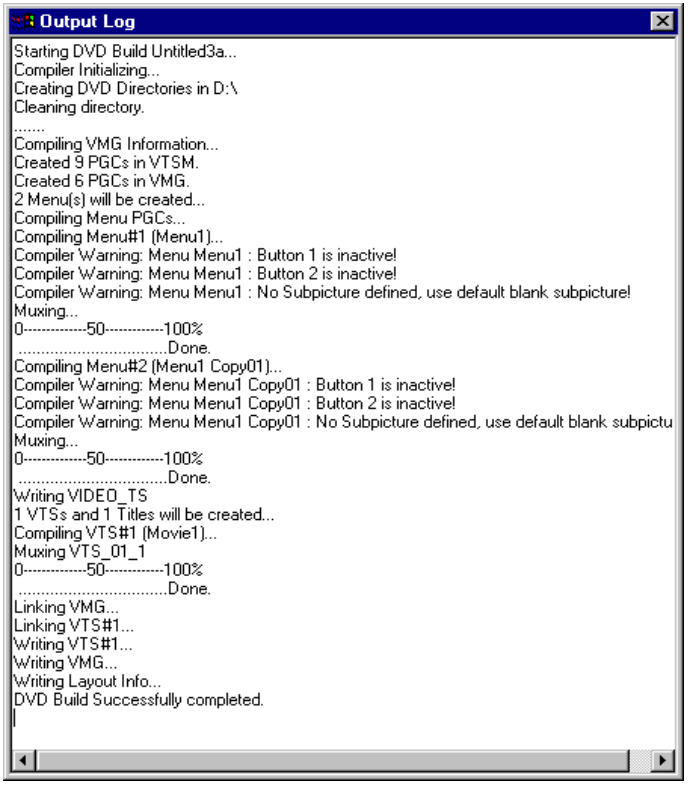
During the compilation, a progress bar displays in the main interface window.



Cancel the compile by clicking on its button (now blue) in the main interface.

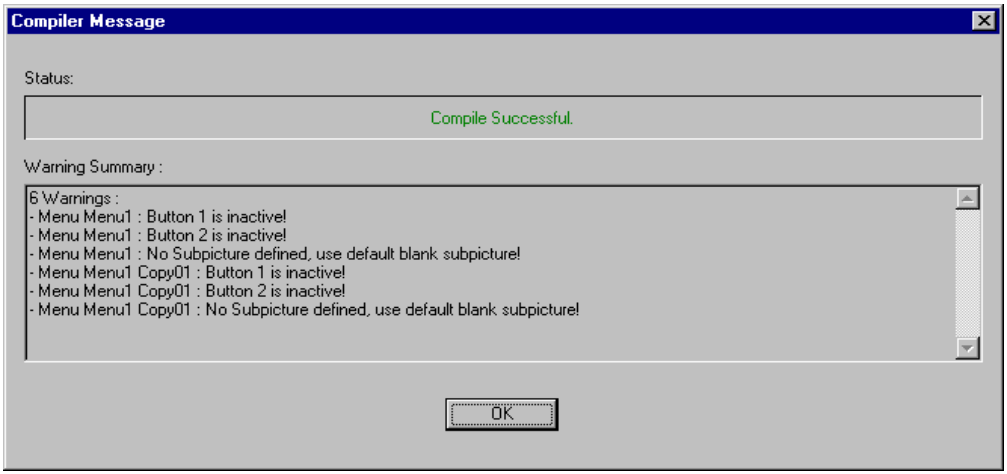
The amount of time required for compilation varies with the size and complexity of the project and read/write speed of the source and target volumes. To get the best compile speed, we recommend against using the same disc volume for source and target. When compiling over a network, high-speed connections optimized for data throughput are recommended.

During compilation, the Output Log window can be used to monitor the process in some detail. The Output Log window does not appear automatically, but can be invoked using the command in the View menu, or its keyboard equivalent (Alt + v + l).



The greatest share of time in compiling is usually spent in multiplexing the video, audio, and subpicture into ".vob" files (sometimes just called "VOBs"). The .vob files are the main content carriers in DVD, and range up to 1 GB in size. Media content larger than 1 GB is split into multiple .vob files.

Upon completion of the compile, a window appears that confirms success of the operation.


Compiler Message
Status:
Compile Successful.
Warning Summary :
6 Warnings :
- Menu Menu1 : Button 1 is inactive!
- Menu Menu1 : Button 2 is inactive!
- Menu Menu1 : No Subpicture defined, use default blank subpicture!
- Menu Menu1 Copy01 : Button 1 is inactive!
- Menu Menu1 Copy01 : Button 2 is inactive!
- Menu Menu1 Copy01 : No Subpicture defined, use default blank subpicture!
OK

The lower window in this dialog indicates any warnings from the compile. These are non-fatal warnings, but may indicate conditions in the DVD project (such as menu buttons without a destination) that may need to be addressed.

In the event of an error condition that prevents a compile, such as insufficient space on the target volume, compilation will not complete, and an explanatory message appears.

> *Note: During compilation, the program writes an information file labeled ".LAY" in the Video_ts folder. This file is a "snapshot" of the Project Properties, and is used to establish the Disc Image Properties during formatting.*

Disc Image Formatting

The result of compilation is a directory, whose name is Video_ts (as defined in the DVD specification) that contains files whose names and contents are rigorously defined to be compliant with the DVD specification. This DVD data structure can be played from hard disc using DVD playback utilities such as the one provided with the Spruce DVD authoring system. For transfer to DVD-R, CD-R/RW, or DLT for mastering and replication, this data structure must be 'formatted' into a disc image (also known as 'discimage') file that conforms to the file system defined for DVD by the specification.

The DVD Disc Image is a UDF-Bridge volume that contains the complete DVD directory structure created when compiling the Project. The DVD volume structure is created “on-the-fly” as data is written to DVD-R, CD-R/RW, or DLT. Usually, there is no need to create a disc image file on the hard disc before creating a DVD-R, CD-R/RW, or DLT master tape.

Using the Format Disc Image Tool

Use the Disc Image Creation Tool whether the disc image is written to hard disc, DVD-R, CD-R/RW, or DLT tape. To invoke the Disc Image Creation Tool:

Click on the ***Format Disc Image*** icon in the main interface.

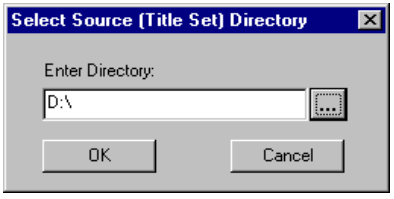
-or-

From the Tools menu, select the command ***Format Disc Image***.

-or-

Use the key combination Alt + t + d from the keyboard.

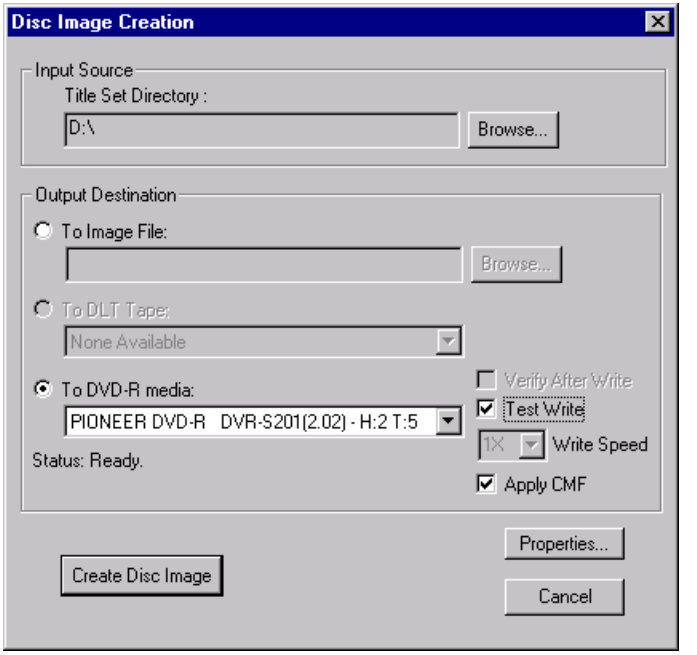
As with project compilation, the source directory selection dialog appears first.



The Format Disc Image command provides two modes of operation, which are defined in the Properties dialog and described in detail later. The default mode is 'DVD-Video'. In this mode, only the DVD Video and DVD Audio content (Video_ts and Audio_ts directories) of the source directory are formatted into the disc image.

In the 'DVD-ROM' mode, *all* contents of the source directory are formatted to the disc image, including Video_ts and Audio_ts directories (if present). DVD ROM discs that contain both DVD Video and other data are normally referred to as 'DVD Hybrid' discs.

Once the source directory is defined, the main Disc Image Creation control dialog appears.



The selected source directory is displayed at the top. Underneath, the Output Destination fields provide for writing the disc image file to hard disc, or directly to DLT tape or DVD-R.

Selecting the Output Destination

For DVD-Video titles and most cases of DVD ROM and Hybrid discs, the disc image may be formatted directly onto DVD-R, CD-R/RW, or DLT tape, saving a process step. In the case of complex DVD ROM or Hybrid structure, or when dealing with slow network connections or disc drives, it may be necessary to write the disc image to hard disc. This disc image can then be transferred onto the target media using the ***Write DVD-R*** or ***Write DLT*** functions from the main menu.

To Image File

As mentioned earlier, this setting is rarely used, since most often it is far more efficient to write directly to the DLT, DVD-R, or CD-R/RW drive. Set the destination path and file name by either typing it in or using the ***Browse…***button.

To DLT Tape

This setting is available only when a suitable tape drive is connected to the system. Writing to DLT is the most common method of providing a disc image to a replication facility. Keep in mind that you need separate tapes for each layer in a dual layer disk, and for each side with a dual sided disk. (A dual sided disk with dual layers on each side will require four tapes!)

The ***Verify After Write*** setting becomes active when ***To DLT Tape*** is selected. Check its box to have the tape's contents verified after it has been written.

With this setting enabled, the ***Properties…***dialog expands to include a Replication tab.

To DVD-R Media

This setting is available only when a suitable DVD-R or CD-R/RW drive is connected to the system. Writing to DVD-R is useful for previewing a title or whenever low quantities of final discs are needed. With the addition of the CMF (Cutting Master Format) setting, it is possible to supply a DVD-R as a master to a replication facility. Currently you cannot write dual layer or dual sided discs.

> *Note: Be sure to verify your replication facility accepts CMF DVD-R discs as master – many do not yet.*

Writing to CD-R/RW is useful for small DVDonCD™ titles that fit onto CD media. This is very useful when it is desired to author a small project intended to be played on PCs (Windows or Mac based). Most software DVD players play DVDonCD titles as if they were on DVD media – in fact the only difference is the media and its storage capability. Spruce also has available the SpruceLink™ freely distributable software DVD player that can be included on your titles. This allows the DVDonCD titles to be played on Windows-based PCs that do not have DVD playing capability. In addition, it also works with Spruce's WebDVD technology to allow URL and other links to be part of your title. SpruceLink loads into the PC's memory only – nothing needs to be installed or written to hard disc. See the www.WebDVD.org website for more information and to download the latest version of the player.

> *Note: Currently, most set-top DVD players do not support playing DVDonCD discs.*

If you have a single DVD-R or CD-R/RW recorder on your system, it will appear in the pull-down field. If you have multiple DVD-R or CD-R/RW recorders connected to your system, just select the desired device using the pull-down field. (Naturally, you'll want to ensure the desired recorder is properly connected and powered on and that you've inserted a blank disc.)

In the case of CD-R/RW drives, the ***Write Speed*** setting becomes active, and is set to the maximum speed your device supports. The first time you write to the drive, it is highly recommended that you use the ***Test Write*** function since it is critical that the drive can actually support the speed throughout the write process. If you have difficulties, try setting this to a lower value.

If you wish to verify the disc after it has been written to ensure there were no problems writing the Disc Image to disc, check ***Verify After Write***. Once the disc has been written, a verification procedure will take place and you'll be notified if there are any problems.

If you wish to perform a test write — to ensure you don't encounter any problems writing to the blank disc, such as buffer underruns — check ***Test Write***. In this case, a simulated burn will take place (without anything been written to the blank disc) and you'll be notified if there are any problems.

Cutting Master Format DVD-R

DVDMaestro and DVDConductor support the CMF (Cutting Master Format) DVD-R function. This allows you to create a DVD-R disc suitable for taking to a replication facility (in place of a DLT).

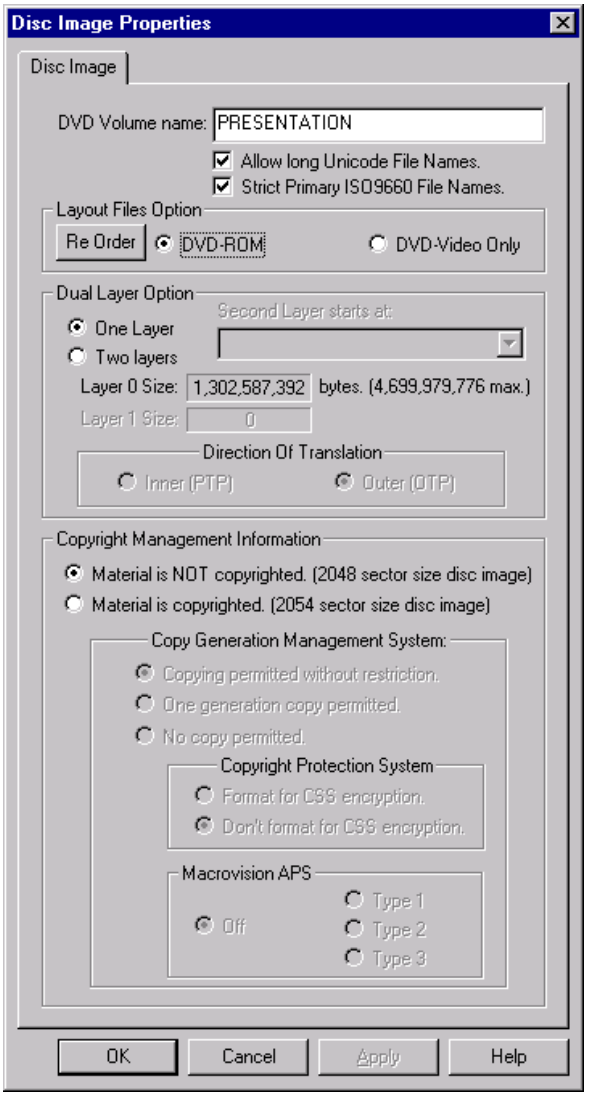
> *Note: Ensure your replication facility supports CMF DVD-R – not all do.*

The Apply CMF checkbox appears only if a Pioneer DVR-S201 DVD-R drive with firmware version of 2.02 or later is connected.

Setting the Disc Image Properties

Before creating the disc image, specific properties that apply to mastering and replication may need to be set. In the lower-right corner of the Disc Image Creation dialog is a button labeled "Properties…". Clicking on this button opens the Disc Image Properties dialog.

> *Note: Macrovision APS must be selected before the title is compiled, and must be set as part of the Disc Image tab in the Project Properties dialog of the Spruce DVD Authoring application, and cannot be set with this Premaster Tool application.*



Disc Image Properties Dialog

DVD Volume Name

This is the name that appears when the end-user inserts the replicated disc or DVD-R into a DVD-ROM computer drive. The default name is 'UNDEFINED'. To change the name, simply select and retype the name.

In accordance with the DVD-Video Specification, the Project name can be a maximum of 32 characters. The only permissible characters are the 26 English language capital letters, numerals 0 to 9, and the underscore ("_"). Other characters and symbols are not allowed, nor are spaces.

Layout Files Option

To create a DVD-Video-only disc, select ***DVD-Video Only***. With this selection (the default selection), your final disc will play back a DVD-Video movie on either a consumer DVD player, or a consumer DVD-ROM player (assuming the personal computer into which it's installed is equipped with the appropriate decoder hardware or software). If ***DVD-Video Only*** is selected and there are data files in the source directory that are not part of the Audio_ts or Video_ts folders, the program will ignore these files, and use only the information in the Audio_ts and Video_ts folders. The resulting disc will be strictly in DVD-Video format.

To prepare titles as DVD-ROM or as Hybrid, select ***DVD-ROM***.

Layout Files option section of the Disc Image Properties dialog.

To prepare a hybrid DVD-Video/DVD-ROM disc:

1. Drag the Audio-ts and Video-ts directories as well as any desired data files and folders into the folder designated as the Source (Title Set) Directory, as specified in the Disc Image Creation dialog.

   *Note : Do **not** place any additional data in the Audio_ts or Video_ts folders - they must contain only what was compiled in to them.*

2. In the Disc Image Properties dialog, select ***DVD-ROM***.

The resulting disc will contain both DVD-Video and DVD-ROM content. See the section "Creating a Reordered Hybrid DVD Title" for information on the ***Re Order*** button.

File Naming Issues

A DVD-Video Only disc contains only two directories: Video_ts and Audio_ts. The file naming structure within these directories is very strict and tightly defined, and conforms to the "8.3" specification (eight characters maximum followed by a three character extension - the only allowed characters are uppercase letters, numbers, and the underscore).

These file names are kept track of in two volumes - a UDF (Universal Disc Format) volume and an ISO-9660 volume, which together are known as the UDF Bridge Format. The advantage having the two volumes is that it makes the DVD disc usable on a wider variety of playback devices. A potential disadvantage is that each volume has its own file naming rules. In the case of a DVD-Video Only disc, since the only files present are those within the Video_ts and Audio_ts directories, then the names in both volumes are identical.

A DVD-ROM disk may also contain the Video_ts and Audio_ts directories. If it does, then each must have the same strict file naming issues as with a DVD-Video Only disc. The difference is that the disc also contains directories and files outside of these normal DVD-Video directories. In addition, a third volume, the Joliet volume, may be created.

As soon as you select DVD-ROM in the Layout Files Option part of the Project Properties Disc Image tab, two checkboxes become active: “Allow long Unicode File Names” and “Strict Primary ISO9660 File Names”. Use these to control the file naming conventions applied to those non-traditional files.

First, lets go over the volume types.

The UDF Volume
All DVD discs have a UDF volume. The UDF volume always supports long (up to 255 characters) Unicode file names. Unicode is a two-byte system allowing far more characters than the standard ASCII (single-byte) system. This is very useful when you want to use Japanese characters, for example. It also supports directories with extensions. Note that the OS prohibits the use of certain characters (\ / ? : “ * < > |) in file names. Set-top DVD players use the UDF volume to begin playing a disc, but only to locate the first files. They never go beyond the Video_ts and Audio_ts directories. Windows 98 and 2000 by default use the UDF volume (although this can be changed by the user).

The ISO9660 Volume
All DVD discs also have an ISO9660 volume. This volume only supports single-byte ASCII characters. The volume is controlled by the “Strict Primary ISO9660 File Names” checkbox. This checkbox is checked by default (including when DVD-Video Only discs are being created). When checked, the ISO9660 volume is forced to conform to the “26.3” specification similar to the “8.3” one mentioned earlier (twenty six characters maximum followed by a three character extension - the only allowed characters are uppercase letters, numbers, and the underscore). In addition, directories are not allowed to have extensions in their names. Filenames are automatically truncated and use the underscore to replace invalid characters. Filenames using two-byte characters exclusively are renamed as FILE_1, FILE_2, etc.

When not checked, the ISO9660 volume is able to support filenames with up to 200 characters. Once again, the only allowed characters are uppercase letters, numbers, and the underscore. Directories with extensions are also supported.

The Joliet Volume
Checking the "Allow long Unicode File Names" checkbox forces the creation of the Joliet volume. This volume supports long Unicode file names, just as the UDF volume, with the exception of a limit of 110 characters. Directories with extensions are also supported. Most non-Windows 98/2000 computers use the Joliet volume by default.

Filenames longer than 110 characters are automatically truncated.

In Summary

To paraphrase the above, following is what the checkboxes do:

Allow long Unicode File Names
Checking this box creates a third volume, the Joliet volume. It has the same rules as the UDF volume, but allows only up to 110 characters. When not checked, the Joliet volume is not created.

> *Note: There have been a few cases where enabling the **Allow long Unicode File Names** checkbox and adding a number of these files has created playback problems on some older DVD players. Select it only if you need to include such files and can test the disc on your intended players.*

Strict Primary ISO9660 File Names
When "Strict Primary ISO9660 File Names" is checked, the ISO9660 volume is forced to conform to the 26.3 specification. When not checked, the volume is able to support filenames with up to 200 characters and directories with extensions.

So Which Boxes Should I Check?

The default mode, with both boxes checked, is the safest and should be used for most situations. If you are not sure, then use this configuration.

Having "Strict Primary ISO9660 File Names" not checked non-standard, but has the unique ability of creating a more robust ISO9660 volume, which is desirable in certain situations.

Adding Mac Files to a Hybrid DVD-Video/DVD-ROM title

You can create hybrid DVD-Video/DVD-ROM discs that include files compatible with Macintosh computers, including both the Data and Resource forks.

There is software available (such as PC MACLAN from Miramar Systems) that allows Macintosh computers and Windows NT computers to share files (i.e. viewing and copying). When using this software, and your destination directory on the NT Windows based computer is formatted as a NTFS volume, pulling or pushing files through this network preserves data file content. For example, copying a file from a Macintosh computer that contains both a Data fork and

Resource fork will be copied to the NT Windows Based computer. Note that only the Data fork data can be viewed on the NT Windows computer, however, if the transfer took place to an NTFS volume, the data is just hidden from the user on NT. When using Spruce's premastering technology, this data is handled correctly and keeps the Macintosh information intact with the file. As a result this file will function properly in a Macintosh computer.

Creating a Reordered Hybrid DVD Title

Note: This section applies to relatively few Spruce authoring software users. If you are creating DVD-Video titles exclusively — or creating a hybrid DVD-Video/DVD-ROM title without physically reordering the ROM files — then you can skip this section.

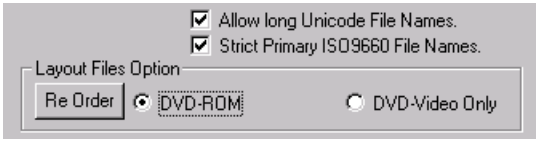
Earlier we discussed how to create a hybrid DVD-Video/DVD-ROM title. In some cases, such as when you need to optimize access speed for the final, replicated disc, you may wish to physically reorder the ROM files as they appear on the disc. Let's review the steps. . .

To create a reordered hybrid DVD-Video/DVD-ROM title:

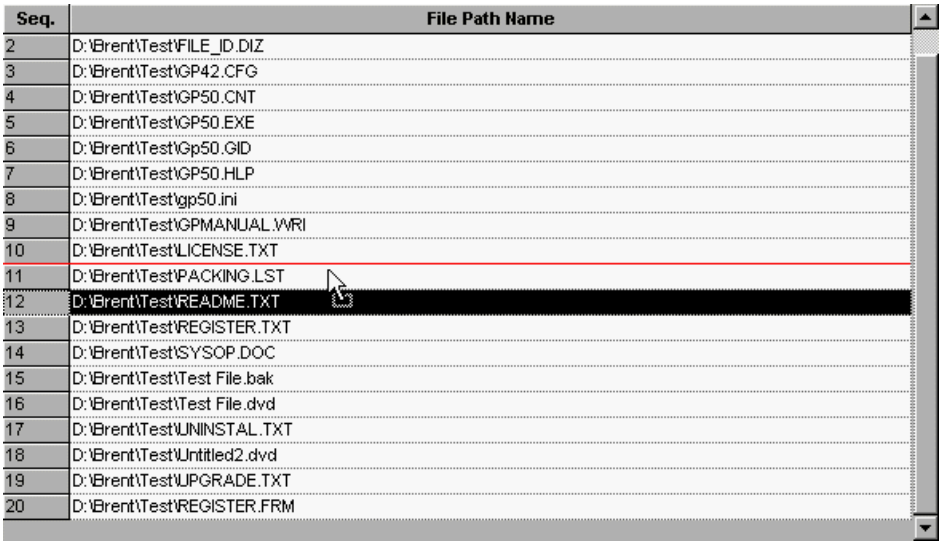
1. As with an ordinary (non-reordered) hybrid title, drag the Audio_ts and Video_ts directories — as well as any desired data files and folders — into the folder designated as the Source (Title Set) Directory, as specified in the Disc Image Creation dialog.

   Note: Be sure you do not place the data in the Audio_ts or Video_ts folders.

2. Open the Disc Image Creation dialog.
3. Next, open the Disc Image Properties dialog by clicking the ***Properties*** button in the Disc Image Creation dialog.
4. In the Disc Image Properties dialog, select ***DVD-ROM***.
5. Click the ***Re Order*** button, just to the left of ***DVD-ROM***, as shown below.



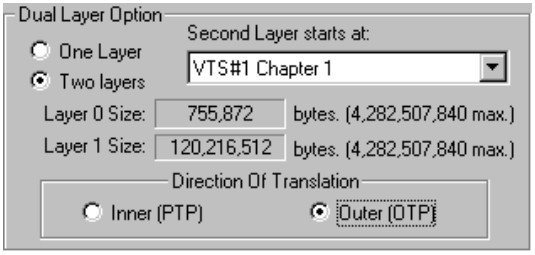
6. The File Re-Order dialog appears, showing the physical sequence (seq) in which the files (file path name) will appear on the disc. To change the order of any or all files, simply click-drag them from their current position to a new position, as shown following.



Seq.	File Path Name
2	D:\Brent\Test\FILE_ID.DIZ
3	D:\Brent\Test\GP42.CFG
4	D:\Brent\Test\GP50.CNT
5	D:\Brent\Test\GP50.EXE
6	D:\Brent\Test\Gp50.GID
7	D:\Brent\Test\GP50.HLP
8	D:\Brent\Test\gp50.ini
9	D:\Brent\Test\GPMANUAL.WRI
10	D:\Brent\Test\LICENSE.TXT
11	D:\Brent\Test\PACKING.LST
12	D:\Brent\Test\README.TXT
13	D:\Brent\Test\REGISTER.TXT
14	D:\Brent\Test\SYSOP.DOC
15	D:\Brent\Test\Test File.bak
16	D:\Brent\Test\Test File.dvd
17	D:\Brent\Test\UNINSTAL.TXT
18	D:\Brent\Test\Untitled2.dvd
19	D:\Brent\Test\UPGRADE.TXT
20	D:\Brent\Test\REGISTER.FRM

7. When you're done, click ***OK*** and to close the File Re-Order dialog.
8. At this point, you can set any of the other parameters in the Disc Image Properties dialog as required; when done, click ***OK***.

Dual Layer Option



Dual Layer Option Section of the Disc Images Properties Dialog

The DVD-Video Specification calls for discs to be one- or two-sided, with one or two layers per side. This section of the Disc Image Properties dialog defines whether the current side has one or two layers, and if there is a second layer, at which Chapter Marker it starts. See "Setting the Replication Properties" later in this manual for details on setting the number of sides.

> *Note: The term first layer" refers to the "Layer 0" in the DVD-Video Spec. Second layer" refers to "Layer 1" in the DVD-Video Spec.*

Click ***One Layer*** if the disc side is to be single-layer (Layer 0 only). Click ***Two Layers*** if the disc side is to be dual-layered (Layer 0 plus Layer 1).

If ***Two Layers*** is chosen, it is also necessary to specify the Chapter point at which the second layer starts. Underneath the "Second Layer starts at:" label is a pull-down box with the names of all the Chapter Markers in the project. To select where the second layer starts, simply click on the pull-down box and choose the desired Chapter Marker.

> *Note: Each layer must have its own DLT tape. You are prompted to insert the second tape once the writing process reaches the chosen chapter marker point. You cannot currently create a two layer DVD-R.*

This dialog also displays the current size of each layer. In accordance with the DVD-Video Spec, each layer supports up to 2,294,912 sectors and 4,699,979,776 bytes per layer. The Layer 0 Size window shows the amount of data, in sectors, that is allocated to the first layer; the Layer 1 Size window shows the amount of data allocated to the second. The amounts allocated changes depending upon how the disc is structured.

> *Note: It's possible to view layer sizes in either sectors or bytes. By default the display toggles between the two values. To select either sectors or bytes, right-click on top of the Layer 0 Size or Layer 1 Size windows until the desired value displays.*

Direction of Translation (Dual Layer Discs Only)

This defines how the laser in the end-user's player reads the second layer of the disc.

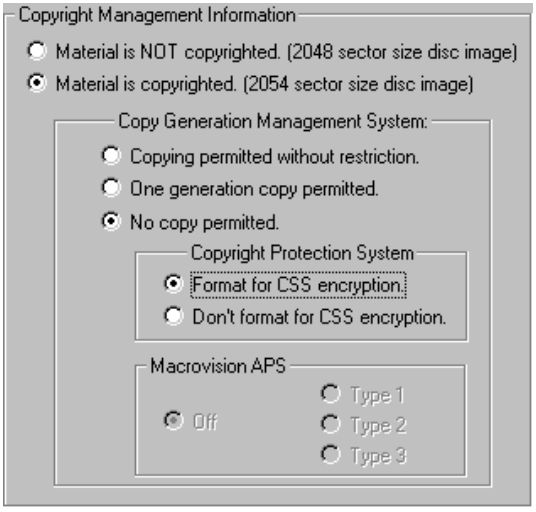
With ***Inner (PTP)***, the replicated disc plays back following the Parallel Track Path (PTP) protocol (both layers are played back in the same direction). The DVD player's laser reads the first layer (Layer 0) from the inside of the disc to the outside. Once the playback laser reaches the end of the first layer, it resets itself back to the inside of the disc, where it reads the second layer (Layer 1), also from the inside of the disc to the outside.

With ***Outer (OTP)***, the replicated disc plays back following the Opposite Track Path (OTP) protocol (the layers are played back in opposite directions). The DVD player's laser reads the first layer (Layer 0) from the inside of the disc to the outside. Once the playback laser reaches the end of the first layer, it accesses the second layer (Layer 1) starting on the outside of the disc, and plays the second layer from the outside to the inside.

Choose ***Outer (OTP)***if you want end-users to experience as smooth a transition as possible between the layers. For video playback, the transition won't be seamless — there may be a slight delay or "blip" as the playback laser realigns itself to the second layer. In practice, however, if you have selected the layer transition point to be at a visual dissolve or a fade-out, the results — as far as end-users are concerned — may be virtually seamless.

Copyright Management Information

To identify the completed disc as not being copyrighted, select the ***Material Is Not Copyrighted*** option in this section. This creates a Disc Image with a sector size of 2048 bytes.



Copyright Management Section of the Disc Image Properties Dialog

To identify the disc as being copyrighted, select the ***Material Is Copyrighted*** option. This creates a Disc Image with a sector size of 2054 bytes.

Copy Generation Management System (CGMS)

The Copy Generation Management System (CGMS) is designed to restrict how many times, if any, an end-user is permitted to copy a final, replicated disc.

> *Note: This section is available only if you have selected the **Material Is Copyrighted** option.*

To allow an end-user to copy the final disc at will, with no restrictions, select the ***Copying Permitted Without Restriction*** option. To allow an end-user to copy the final disc just once — without the ability to make successive copies of that first copy —select the ***One Generation Copy Permitted*** option. To prevent an end-user from making any copies of the final disc whatsoever, then select the ***No Copy Permitted*** option.

Copyright Protection System

For copyright protection purposes, Spruce authoring software allows you to format your Project so that a mastering/replication facility will be able to use Contents Scramble System (CSS) encryption — assuming the facility is licensed and authorized to do so.

If you want to alert the mastering/replication facility to use CSS, then select ***Format For CSS Encryption***. Otherwise, select ***Don't Format For CSS Encryption*** (the default setting).

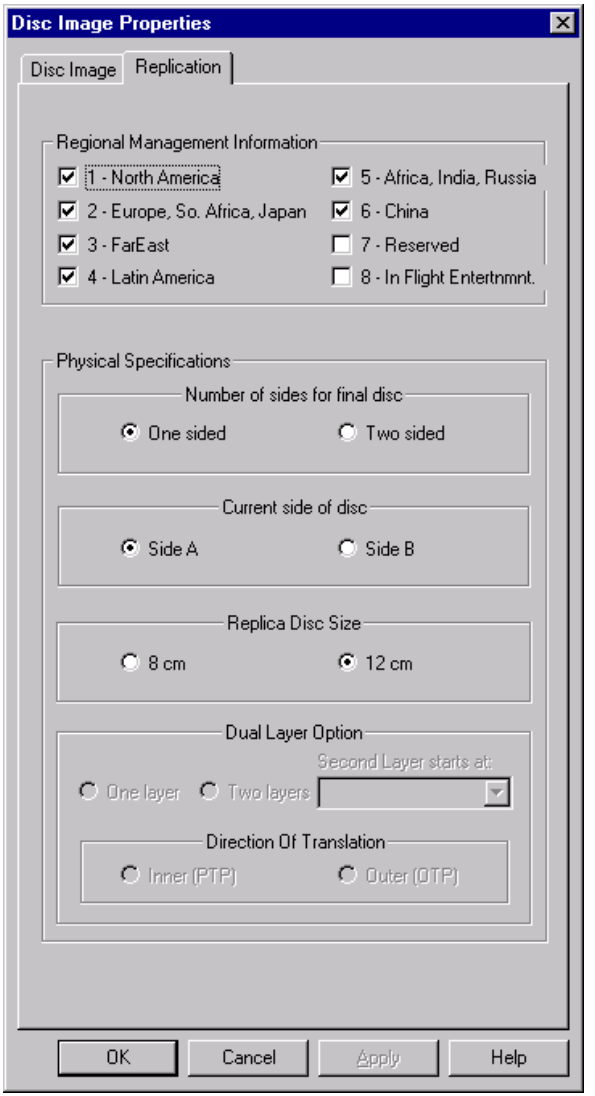
> *Note: You must select **No Copy Permitted** in order to apply the CSS Copy Protection System. Otherwise, these options are grayed out.*

Macrovision APS

As noted previously, Macrovison APS must be selected by the authoring application prior to compiling if it is to be used in a given project.

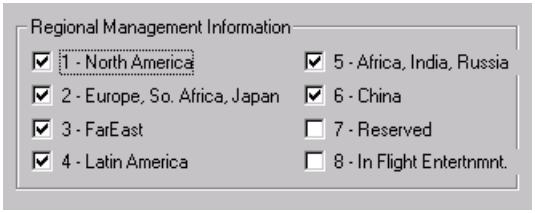
Setting the Replication Properties

The Replication tab in Project Properties only displays when DLT is selected as the output destination in the Disc Image Creation dialog.



The Replication Properties dialog has several sections, as follows. . .

Regional Management Information


Regional Management Information
1 - North America
2 - Europe, So. Africa, Japan
3 - FarEast
4 - Latin America
5 - Africa, India, Russia
6 - China
7 - Reserved
8 - In Flight Entertnmnt.

Regional Management Section of the Replication Dialog

The DVD-Video Specification calls for end-user DVD-Video players to be geographically regionalized. For instance, a DVD-Video player sold in India has an internal code identifying it as a "Region 5" player; a DVD-Video player sold in Luxembourg has an internal code identifying it as a "Region 2" player.

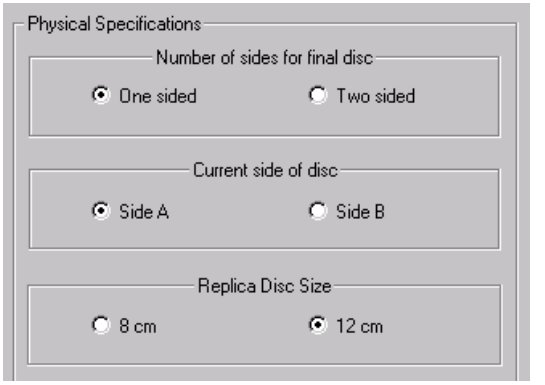
The purpose of this is so that discs can be tagged to play back only in authorized regions. In this way, disc publishers aim to maintain greater control over the global distribution of their products. For instance, in order to allow someone in Luxembourg to play your final, replicated DVD-Video disc, you would need to tag the disc to allow playback in Region 2.

In the Regional Management Information section of the Replication Properties dialog, you can select which region or regions you wish to authorize for playback of your final replicated disc. If you enable all six regions (a checkmark indicates that a region is enabled), end-users will be able to play back your disc in any part of the world. To restrict regions, simply uncheck them as desired.

One of your Spruce authoring software's many benefits is that the Region setting in the final Disc Image is independent of the Region setting used during compilation and emulation. During compilation, the Region setting in the Video_ts directory is resolved to that of the emulation card. When the Disc Image is generated, the Region settings for both lead-in and Video_ts are resolved to the setting in this Replication tab.

This has two benefits. First it assures that you can successfully emulate your title regardless of what region you are authoring for. Secondly, it guarantees that the two places where Region code is set (lead-in and .ifo) will agree — which in turn ensures that your final replicated disc will behave consistently across all playback platforms.

Physical Specifications



Physical Specification Section of the Replication Dialog

The Physical Specifications section is where you define the physical attributes of the final, replicated disc.

The options you select in this Physical Specifications section are used to create a Data Description Protocol (DDP) file on the DLT, which in turn is used by the mastering/replication facility to prepare your disc.

> *Note: Spruce authoring software currently supports DPP version 2.0 tape layout.*

The DVD-Video Specification calls for discs to be one- or two-sided. In the Number of sides for final disc" section, click ***One Sided*** if the disc is to be a single-sided disc. Click ***Two Sided*** if the disc is to be a two-sided disc. The purpose of this selection is to provide a flag in the DPP file, which alerts the mastering/replication facility that your disc is one- or two-sided — and that they should expect two DLT tapes if it's two-sided.

If you have selected ***Two Sided***, unless you intend to put exactly the same information on both sides of the disc, you will need to create two separate Disc Images. (You could use the same Project to create two separate Disc Images, by writing one Disc Image, then changing the Project and writing the next, but in most circumstances, you'll probably want to create a new Project for each Disc Image.)

If you are creating a two-sided disc, you will need to write one tape for each side.

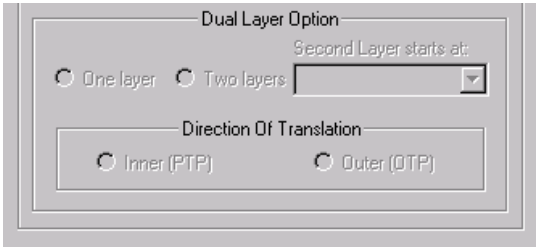
> *Note: If one or both of the sides is dual-layer, you'll actually write two tapes for each side — one for each layer.*

The purpose of the ***Current Side Of Disc*** selection is to provide a flag in the DPP file, which lets the mastering/replication facility know which side of the disc the current tape corresponds to. Select ***Side A*** or ***Side B*** as appropriate.

For the ***Replica Disc Size*** section, ***12 cm*** is the default option, since currently this is the most common size for DVD-Video discs. Choose ***8 cm*** if you intend to create a small-sized disc.

Note: At this writing, no DVD replication facilities support the 8 cm size option.

The Dual Layer Option Section



The Dual Layer part of the dialog is always grayed out when you are preparing to create the disc image. Use the dual layer controls provided in the Disc Image tab.

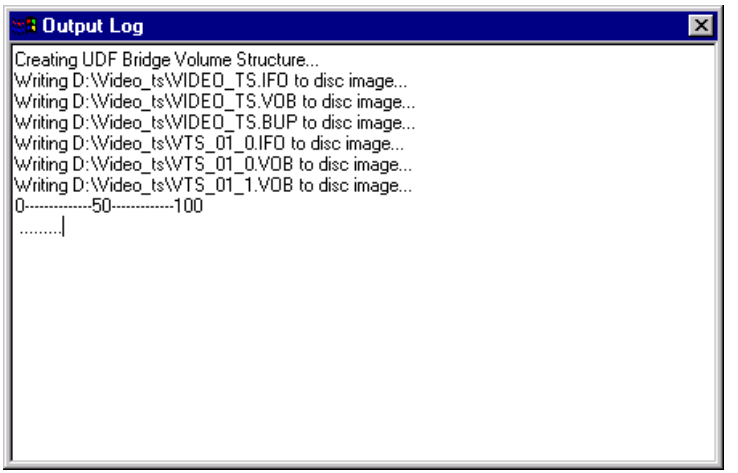
It is intended to provide information when using the ***Write to DLT*** function, and you are just copying the disc image to tape. The only change you can make in this instance is the ***Direction of Translation*** setting; all other aspects of dual layering must be set prior to the disc image being created.

Initiating Disc Image Formatting

After the source directory, destination device, and properties have been set, initiate formatting of the disc image by clicking on ***Create Disc Image*** in the Disc Image Creation dialog. As with compilation, a progress bar is provided to monitor the process.

Cancel the disc image writing by clicking on its button in the main interface window.

The Output Log Window also provides detailed information on the formatting process. Open it by clicking on ***View*** then selecting ***Log Window***, or use the keyboard equivalent of Alt + v + l.



Transferring the Disc Image to DVD-R or CD-R/RW

As mentioned earlier, the ***Write DVD-R*** function is not used in normal situations. Unless you need to re-order the file layout or you have transfer speed issues between your computer and the DVD-R or CD-R/RW drive, you should use the ***Format Disc Image*** function and write directly to the drive.

Transfer a formatted disc image on the hard disc to a DVD-R or CD-R/RW using the ***Write DVD-R*** function. Start the process by either:

Clicking on the ***Write DVD-R*** button in the main interface,

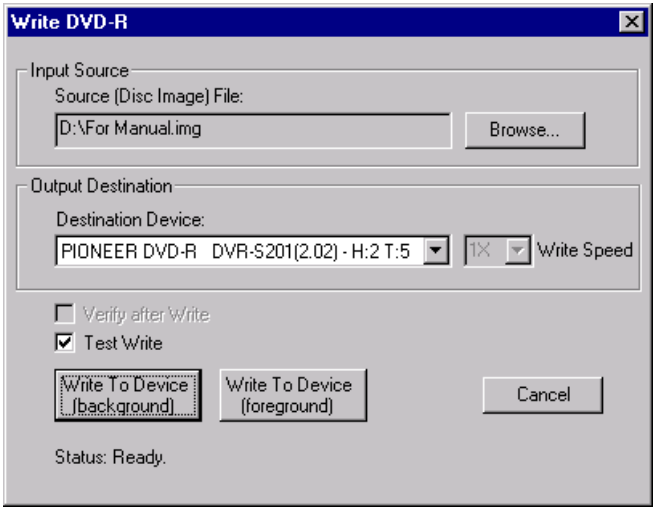
-or-

From the ***Tools*** menu, select the command ***Write DVD-R***,

-or-

Use the keyboard equivalent of Alt + t + r.

This opens the Write DVD-R dialog, as shown below.



Use this dialog to set the input source, the output destination, and to set various write modes.

If you have a single DVD-R or CD-R/RW recorder on your system, it will appear in the pull-down field. If you have multiple DVD-R or CD-R/RW recorders connected to your system, just select the desired device using the pull-down field. (Naturally, you'll want to ensure the desired recorder is properly connected and powered on and that you've inserted a blank disc.)

In the case of CD-R/RW drives, the ***Write Speed*** setting becomes active, and is set to the maximum speed your device supports. The first time you write to the drive, it is highly recommended that you use the ***Test Write*** function since it is critical that the drive can actually support the speed throughout the write process. If you have difficulties, try setting this to a lower value.

Check ***Test Write*** to have the system run a quick test to ensure the required data speed can be reached, avoiding "Buffer Underrun" errors. This test does not actually write any data.

Select either the ***Background*** or ***Foreground*** method of writing to DVD-R. Select ***Background*** to allow working with other applications while writing to the disc. Select ***Foreground*** to lock out the rest of the system, allowing no other applications to be used while writing to the disc.

> *Note: The **Foreground** setting is strongly suggested, providing a more reliable SCSI interface by eliminating extraneous loads on the bus.*

Once you select either the background or foreground method of writing, the image starts getting copied. A progress bar displays in the main menu. The Output Log Window provides detailed

information on the process. Open it by clicking on ***View*** (in the main menu) then selecting ***Log Window***, or use the keyboard equivalent of Alt + v + l.

Cancel the disc writing by clicking on its button (now blue) in the main interface window.

A message window displays once the write is complete. It confirms the operation was successful and describes any issues that came up.

Transferring the Disc Image to DLT

As mentioned earlier, the ***Write DLT*** function is not used in normal situations. Unless you need to re-order the file layout or you have transfer speed issues between your computer and the DLT drive, you should use the ***Format Disc Image*** function and write directly to the DLT drive.

Transfer a formatted disc image on the hard disc to a DLT using the ***Write DLT*** function. Start the process by either:

Clicking on the ***Write DLT*** button in the main interface,

-or-

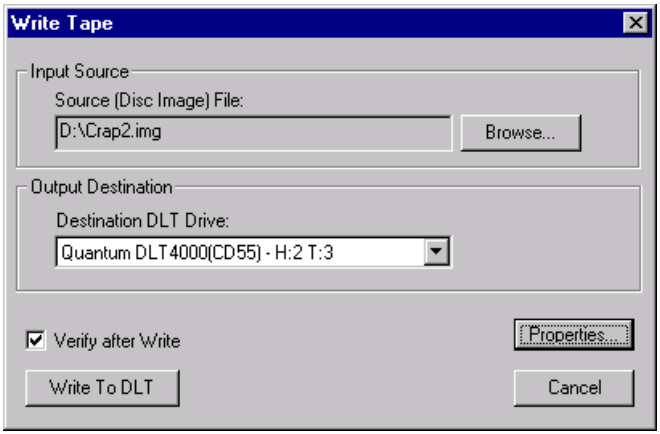
From the ***Tools*** menu, select the command ***Write DLT***,

-or-

Use the keyboard equivalent of Alt + t + w.

This opens the Write Tape dialog, as shown below.

Use this dialog to set the input source, the output destination, and to set various write modes.



Check ***Verify after Write*** to enable an automated verification of the tape after it has been written. This is strongly suggested in order to ensure the tape has an accurate copy of the disc image.

Click ***Properties*** to open the same Replication dialog as discussed previously. See "Setting the Replication Properties" for details on these settings.

Click ***Write To DLT*** once all settings are correct and you are ready to transfer the image to the tape. A progress bar displays in the main menu. The Output Log Window provides detailed information on the process. Open it by clicking on ***View*** (in the main menu) then selecting ***Log Window***, or use the keyboard equivalent of Alt + v + l.

Cancel the DLT writing by clicking on its button (now blue) in the main interface window.

A message window displays once the write is complete. It confirms the operation was successful and describes any issues that came up.

Verifying the DLT

Verify a DLT against the hard disc image using the ***Verify DLT*** function. This duplicates the process that can be selected in the ***Write DLT*** function. Start the process by either:

Clicking on the ***Verify DLT*** button in the main interface,

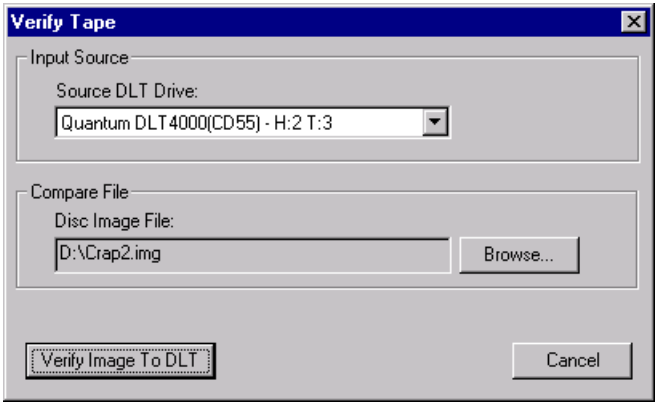
-or-

From the ***Tools*** menu, select the command ***Verify DLT***,

-or-

Use the keyboard equivalent of Alt + t + v.

This opens the Verify dialog as follows.



Input Source allows you to select the drive to use when multiple DLT drives are present. Use ***Compare File*** to select the disc image to compare to the tape.

Click ***Verify Image to DLT*** once all settings are correct and you are ready to compare the images. A progress bar displays in the main menu. The Output Log Window provides detailed information on the process. Open it by clicking on ***View*** (in the main menu) then selecting ***Log Window***, or use the keyboard equivalent of Alt + v + l.

Cancel the verify process by clicking on its button (now blue) in the main interface window.

A message window displays once the verify is complete. It confirms the operation was successful and describes any issues that came up.

Network Operation

One of the biggest features of DVD Premaster Tool is its ability to work across a network. A project can be authored on one system while the time consuming tasks of compilation and disc image creation are off-loaded to one or more systems. To get the greatest efficiency in working over a network, you will want to observe the following points.

Network Speed/Throughput

Network speed and throughput are major factors in the efficiency of distributed DVD production. As a Windows NT®-based solution, the DVD Premaster Tool, like all of Spruce's DVD production products, is compatible with any standard networking technology. Because of the large asset size and high throughput rates associated with digital media production, attention to the configuration and technology will greatly improve the results.

100baseT Ethernet

Ethernet is by far the lowest cost and most widely distributed technology for computer networking. However, because Ethernet was developed for less-demanding applications in an office environment, some special considerations should be observed.

Ethernet networking hardware is readily available in different speed/performance levels. Only a short time ago, 100 mbps ('100baseT') Ethernet was an exotic and expensive technology. Today, it is readily available at nearly the same prices as 10 mbps Ethernet. While the older 10baseT Ethernet is decidedly not suitable for media production, 100baseT can be used very effectively (and economically) so long as the network configuration is suitably optimized.

Because it's roots lie in office applications that are much less demanding, Ethernet imposes a high overhead of 'arbitration' between multiple stations on a network. As a result, a simple 100baseT network will work very well between 2, or possible 3 stations. However, as additional systems are added, the throughput of all systems goes down very rapidly.

The best method to alleviate the performance hits associated with multiple systems on an Ethernet network is to use a 'switching' network. The cost of switching hubs is higher than it is for simple connecting hubs, but still quite reasonable. This serves to isolate systems that are communicating from other systems on the network, so that data transfer can proceed at close to full speed, even when many systems are in operation.

Even faster Ethernet configurations (so-called 'Gigabit Ethernet') are emerging, although offerings are still limited and costs comparatively high. The economics of scale that apply in the Ethernet world probably indicate that these higher-performance Ethernet technologies will enter the mainstream within a short time.

Fibre-Channel Networks

A leading technology for very high-performance networking is Fibre-Channel. Fibre-Channel networks deliver very high throughput rates, but are much less well established than Ethernet technology. As a result, costs for Fibre-Channel equipment is much higher, and interoperability is much less well established.

Fibre-Channel networks can also be configured with a very wide range of options and topologies. Because of this, and because there's no guarantee that Fibre-Channel equipment from different vendors will work optimally, Spruce recommends working with an integrator who is experienced in the media-production applications of Fibre-Channel to establish an efficient and stable network.

Remote Compilation

Spruce's DVD authoring systems use a 'literal' file path to identify the location of the media asset files incorporated into a DVD project. When a project is authored with any of the Spruce DVD authoring programs, it locates the assets using the drive letter and directory paths identifying where they are. For example, the project may have a reference to a file "d:\projects\demo\credits.m2v". When opening this project (on the same or another system), all assets are located by the literal path to the 'd:' drive

When opening the project from a networked system, the project assumes the drive letter and directory paths still apply, when in real life, the local system may not even have a "d:\" drive! Once Premaster Tool determines the file does not exist as defined in the project, it prompts you to try and locate it manually, and likewise prompts for the location of every other media asset used in that project. A project with hundreds or thousands of assets would take a long time to open under this circumstance.

When authoring a project that is to be compiled by a remote system, it is very worthwhile to attend to the drive letter names. Specifically, you should make every effort to see that the drive (or drives) on which the source assets are located is mounted under the same drive letter on both the authoring system and the compiling system (running DVD Premaster Tool).

If the assets are located on a drive or drives local to the authoring system, then some care may be needed in order to make sure that the compiling system can mount the volumes remotely with the same letter names that are used by the local system.

Another answer is to have a server with all the assets. That way both the authoring system and the Premaster Tool system will have the same access and presumably can mount the volume (remote to both systems) under the same letter name. By attending to the drive letter-naming conventions in your facility, you can guarantee that distributed authoring can proceed at maximum efficiency.

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